NOVEMBER, 1970

Technician Engineer

International Brotherhood of Electrical Workers - AFL-CIO

545642 EWTE L 77
ROLAND KISSLER
BOX 956
MOSES LAKE WASH 98837

A BACKWARD GLANCE

What was it like in communications and science 50 and 100 years ago? The items below, culled from the electrical and broadcasting magazines of the Smithsonian Institution's Library in Washington and other sources of information, reveal a few surprises about "modern" technology, while exploring the byways of the industries that gave birth to broadcasting and recording.

50 Years Ago

Major Edwin A. Armstrong, pioneer radio inventor who began his career while still a graduate student at Columbia University, devoted his whole life to radio engineering. Among his numerous contributions to radio technology was the superheterodyne circuit, which he patented in 1920.

His work on the superheterodyne, which made possible the reception of signals too weak for the vacuum tubes of the day was done in France during World War I. Armstrong was a commissioned officer in the Signal Corps at the time. "I happened," he wrote, "to be watching a night bombing raid and wondering at the ineffectiveness of the anti-aircraft fire. I may say that night bombing was not very dangerous in those days, either for the man on the ground or the man in the airplane. Thinking of some way of improving the methods of locating the position of the airplanes, I conceived the idea that perhaps the very short waves sent out from them by the motor ignition system might be used. The unique nature of the problem, involving the amplification of waves shorter than any ever contemplated and quite insoluble by any conventional means of reception, demanded a radical solution."

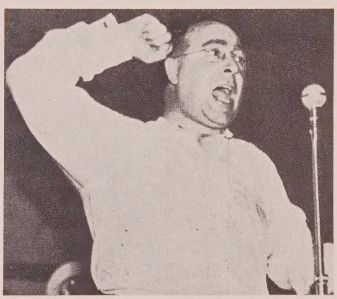
Armstrong's solution was a receiver more sensitive than any wireless apparatus yet invented. Although never used for anti-aircraft detection, it became important for radio reception. Basically, in Armstrong's superheterodyne, the heterodyne principle developed by Reginald Fessenden was used to change the frequency of the signal being received to a lower but superaudible frequency which could be easily amplified. The amplified signal was then transformed again into an audible signal.

This valuable contribution to the art of communication had, by 1940, found its way into 98 percent of the millions of broadcast radio receivers in use.

30 Years Ago

In 1940 Republicans and Democrats adopted a "free radio" plank for party platform, both urging that radio be given the same protection from censorship as the print medium. The Republicants action came at its national convention, at which time it chose Wendell Lewis Willkie to run against Democrat Franklin Delano Roosevelt, running for his third term as President. Willkie carried only ten states and was defeated by an electoral vote of 449 to 82.

The "free radio" issue had simmered for many months before being acknowledged by both political parties. Actions of the Federal Communications Commission in the previous year had set the stage for revolt in the radio industry. Before June 1, 1939, international broadcasts were prohibited from commercial sponsorship, but the ban was lifted only when limits were placed on type of programming to be carried, thus raising fears of censorship. In the following months, the state of Pennsylvania became embroiled in attempts to suppress certain ad libbed remarks of Al Jolson made on NBC. Also the right to "deny sale of time for controversial issues" was raised by the National Association of Broadcasters over sponsored religious broadcasts of Father Coughlin.



The weekly CBS-broadcast Golden Hour featuring fiery Catholic evangelist Father Charles E. Coughlin, left the air in 1940 amid charges of radio censorship. In 1939 the National Association of Broadcasters implied Father Coughlin's stands on politics and religion were controversial, and thus violated NAB code. The FCC Chairman suggested that it endorsed the code, and as a result many stations dropped the program, ending in its eventual cancellation.

Then on April 1, 1940, the U.S. Supreme Court upheld the "free competition" stand of the FCC, emphasizing that the Communications Act gave the Commission "no supervisory control of the programs, of business management or of policy." The unlimited freedom of radio appeared to die as an issue, however, as the nation became of one voice as a second world war loomed on the horizon.

The International Brotherhood of Electrical Workers

CHARLES H. PILLARD — International President
JOSEPH D. KEENAN — International Secretary
HARRY VAN ARSDALE, JR. — International Treasurer

ALBERT O. HARDY — Editor, Technician-Engineer

Technician Engineer

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the cover

How times have changed! On the cover is a vintage photograph of the 500-watt transmitter of KNX, operated in 1924 from an office in the Hoffman Building, located at Hollywood and Gower, Los Angeles. Compare this picture with the modern facilities of the same station, as described in the story featured in this issue. Members of IBEW Local 45 have paced the progress of KNX/Newsradio through the years. Read the story about these veteran members of IBEW and the KNX technical staff who helped make radio history.

index

For the benefit of local unions needing such information in negotiations and planning, here are the latest figures for the cost-of-living index, compared with 1969, October, 1969—129.8; October 1970—137.2.

commentary

Manufacturers' suggested retail prices on new model passenger cars, after adjustments for quality changes, average $226 (or 5.9 per cent) more than a year ago, according to the Department of Labor. The average covers a representative list of domestic cars except for the newly-introduced sub-compacts.

Prices for the basic vehicle and most optional equipment rose significantly. Suggested retail prices for 1971 model automobiles as customarily sold averaged $220 above last year's models. Voluntarily-added safety features had an average value of $10 at retail. More than offsetting these improvements were the elimination of the 5-year/50,000 mile warranty, changes of equipment from standard to optional, and certain other changes which varied from car to car. The net quality reduction of $6 compares with increases of $46 in 1969 and $1 in 1968.

Now we await the tearful announcement of the nation's largest manufacturer that the recent strike settlement will result in more price increases. In the spirit of the season just before us: "Humbug!"

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KNX Director of Technical Operations Ted Denton points to mounted plaque, dating back to 1924 when the station ran on a 500-watt transmitter.

With a steady hand from IBEW Local 45,

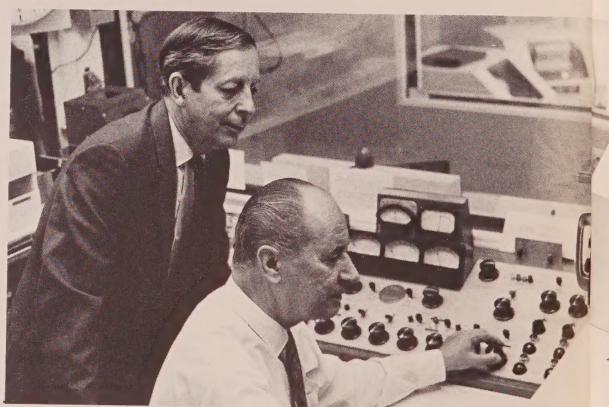
KNX POINTS THE WAY!

KNX/NEWSRADIO, the CBS O & O station in Los Angeles, was a five watt station a half-century ago. Born in a back bedroom of a house on Harold Way, its such meagre beginning was just a stone's throw from its present home base at Columbia Square. Columbia Square is a giant complex, initially built at a cost of $2 million in 1937, that also houses the studios of Columbia Records and KNXT, Los Angeles' CBS television station.

Fred Christian, a young man with some experience as a shipboard radio operator and thus a radio enthusiast, built the transmitter in his bedroom and obtained a license for 6ADZ. On September 10, 1920, he began "broadcasting" recorded music by borrowing records from music stores in return for plugs on the air. Christian was the disc jockey, announcer, engineer and janitor in this budding enterprise. A year later, he received the call letters KNX, and moved his transmitter to the California Theater in downtown Los Angeles.

In 1922, he obtained Department of Commerce approval to boost his power to 50 watts and the license was issued to the Electric Lighting and Power Company of Los Angeles, by which time Christian was manager of the company. At the tender age of four, KNX enjoyed another spurt of growth to 500 watts and became owned and operated by the Los Angeles Evening Express newspaper. It was moved back to the Hollywood area, to the Hoffman Building at Hollywood Boulevard and Gower Street. The power was again increased, this time to 5,000 watts, in 1929.

Twelve years after its humble birth, KNX was operating with 10,000 watts and under the ownership of the Western Broadcasting Company on the old Paramount lot on Marathon Street, Hollywood. This, too, was the year a young sound technician by the name of Carl Campbell came to work for KNX. The veteran IBEW member nostalgicaly recalls when a week's work then consisted of at least 30 hours of remote work, covering dance bands and nightspots. This summer,



Audio Supervisor Cliff Thorsness watches over the shoulder of Carl Campbell, 38-year KNX veteran, in the station's control center.

Ed Dieden, veteran of nearly 20 years service with KNX, is shop Steward of IBEW Local 45. He is shown here working in the newsroom studio.

Campbell, a member of the CBS 20-Year Club, completed 38 years of service with KNX, the longest of any employee now at CBS Hollywood.

In 1933, KNX went to 25,000 watts and moved to the Otto K. Oleson Building at Selma and Vine in Hollywood.

The year 1934 was a grand occasion for KNX when it was granted 50,000 watts and a year later the station moved its operations to a new building on Sunset Boulevard.

Finally, after 16 years, KNX found a permanent home with Columbia Broadcasting System, Inc., by purchase of the station from Western Broadcasting. Within a short time, eight network programs were originating from those Hollywood studios.

This rapid increase in broadcast operations resulted in the need for more space. Ground was broken in 1937 for KNX/CBS Studios at Sunset Boulevard and Gower Street, the site where the Al Christie Studios had been making motion pictures since 1911. Thus, a bronze plaque, anchored at the base of the flagpole in front of

This is Columbia Square, located at 6121 Sunset Boulevard in Hollywood, which houses KNX/Newsradio, Columbia Records, and KNXT Channel 2.

IN L.A.

Columbia Square, still marks the spot as the site where the Hollywood motion picture industry was launched.

As broadcasting activities heightened, more persons were hired and among them were two sound men, Ted Denton and Cliff Thorsness. Denton now is Director of KNX Technical Operations, and Thorsness is Studio Supervisor. Both were hired in 1937. They are members of the CBS 20-Year Club, as are Charles Long (1942) and Jim Pincock (1943). Ted, especially, is fondly remembered by many old-timers as having been active in union organization and administration in the early years of the ABT and the IBEW.

On April 30, 1938, an all-day dedication of the $2 million building, designed by William Lescase, one of America's most distinguished contemporary architects, was held.

From this broadcast center many of the nation's most memorable and foremost radio programs were broadcast, featuring such stars as Eddie Cantor, Al Jolson, Joe Penner, Jack Benny, Gene Autry, Steve Allen, Frances Langford, Stu Erwin, Jack Oakie, Jeanette MacDonald, Phil Baker, Edgar Bergen, Bing Crosby, Orson Welles, Red Skelton, Jackie Gleason, Burns and Allen, Rosemary Clooney, Ed Wynn and others.

The top-rated programs were Irma, Carnation Hour, Hollywood Hotel, Hallmark, Prudential, Lux Radio Theatre, Big Town (Edward G. Robinson), Silver Theater, Paul Whiteman Show, Beulah, Star Playhouse, Lucky Strike Hit Parade, The Saint, and Lineup.

Cliff Thorsness, when asked about the feverish activities of the 30's and 40's, easily recalled when the popular Lux Theatre originated from CBS Radio's Vine Street Playhouse (now the Huntington Hartford Theater), the Screen Actors Guild Show from the world famous Earl Carroll's (now the Aquarius Theater), and Big Town, Silver Theater and the Paul Whiteman Show from the Wilshire Ebell Theater.

Continued on next page

KNX

KNX POINTS THE WAY

Continued from preceding page

Audio Supervisor Cliff Thorsness at remote control for the transmitter located in Torrance, California

Cliff Thorsness, left, and Ted Denton, right, in master control, the network center.

Cliff says that in the "old days" when so many of the top network programs were broadcast from KNX, a great camaraderie existed among the sound department, director, orchestra and cast of any particular program. When Jack Benny went for a consultation with his physician at Cedars of Lebanon Hospital one day, he found a KNX sound effects man, Berne Surrey, wearing a white coat and asking solicitiously of his health. The comedian thought he was being put on, and at first refused to believe that Surrey was interning at Cedars and working nights while pursuing his medical studies. Dr. Surrey now is a nationally known psychiatrist with offices in West Los Angeles.

In 1938, the KNX transmitter was moved to a new plant in Torrance, California. The construction of its FM transmitter atop Mt. Wilson was completed in 1948, initially broadcasting a portion of each day's KNX/AM programming. Today KNX/FM broadcasts on a frequency of 93.1 megahertz with 67,000 watts ERP.

It should not be left unrecorded that KNX can be credited with having helped the CBS-TV network get its West Coast start in 1949, when its Studio A was relinquished to be the network's first Hollywood studio. When Television City was subsequently built, Studio A was not again used until it and adjoining space was remodeled to become the studios and offices of Columbia Records. During the years 1960-61, KNX replaced both its studio and AM transmitter equipment with the latest and most advanced available, along with extensive revisions of its studios and control rooms.

KNX signal has been logged in such remote and distant places as Lake Chad, Tanganyika in Southern Africa, North Africa, New Zealand, Kwajalein, Okinawa, Australia, Japan, China, Mexico, Alaska, Newfoundland, Greenland, Norway, Tahiti, Hawaii and all parts of the United States.

KNX went to an all-news format in January 1970 under the management of George Nicholaw, Vice President, CBS Radio Division, and General Manager of KNX/NEWSRADIO. It jealously maintains its reputation as Western America's most honored radio station and is the key station of the CBS Radio Pacific Network encompassing 43 stations in 14 Western states. This month, KNX-FM began what it calls "Stereo 93" programming, a combination of the top 40, easy listening and oldies. It has promised its listeners 9 minutes of every 10 will be music, and no extremes like underground rock and what is now known as psychedelic numbers.

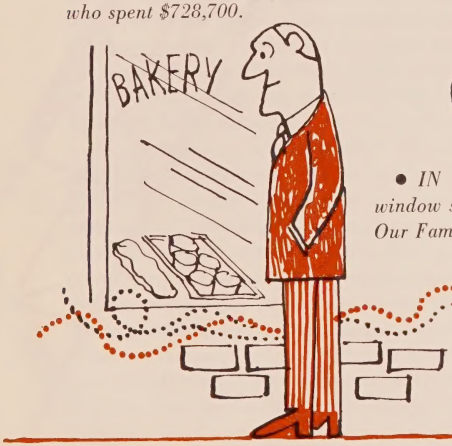
In summing up KNX/NEWSRADIO's current broadcast efforts, Nicholaw said: "It has been two years since KNX introduced the NEWSRADIO concept to listeners in Southern California, and the continuous flow of news and information has added a greater dimension of responsibility to all of our technicians. The all-news radio format will make greater demands on our entire staff and provide us with our greatest challenge."

THE LABOR-MANAGEMENT WHIRL

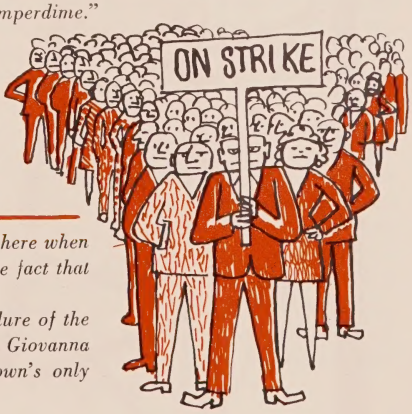
As reported by **Les Finnegan** in **CAVIL-CADE**, *distributed by* **Press Associates, Inc.**

• *IN WASHINGTON, D.C., a lion cub was the star attraction of a picketline thrown in front of a District of Columbia drug store by Local 400 of the Retail Clerks International Association AFL-CIO. Draped over the cub's back was a sandwich board which read, "Please Respect Our Picket Lion." And people did! Hundreds of customers walked away. Management also got the idea, RCIA leaders reported, because when the new contract was signed it contained some of the most important gains in the local union's history.*

• *IN NEW YORK CITY, never before in U. S. history was so much money spent by big business and industry to defeat pro-labor candidates as in the Nov. 3 elections. Gov. Nelson Rockefeller spent at least $6,000,000 to defeat Arthur Goldberg who was able to afford only 37 campaign assistants as compared with 370 on Rockefeller's staff. Conservative Party Senate candidate James L. Buckley reported expenditures of $1,129,600 to defeat Richard Ottinger, the Democratic candidate who spent $728,700.*



• *IN NEW YORK CITY, an AFL-CIO Bakery Union member reported this window sign as a symbol of creeping inflation: "Sorry, But Due To Rising Prices Our Famous Pumpernickel Is Now Pumperdime."*



• *IN FLERO, ITALY, the world's most unusual postal strike occurred here when the postmistress went on vacation. What made the dispute unique was the fact that it was not the postal workers who went on strike but the whole town.*

The entire population refused to do any work in protest against the failure of the federal government to send in a substitute for vacationing Postmistress Giovanna Sicli. Miss Sicli is not only the town's postmistress; she's also the town's only letter-carrier.

A matter of computer technology . . . or advanced communications?

DATA TRANSMISSION

THERE ARE 1700 applications for microwave service now pending before the Federal Communications Commission; most of those things are for data transmission.

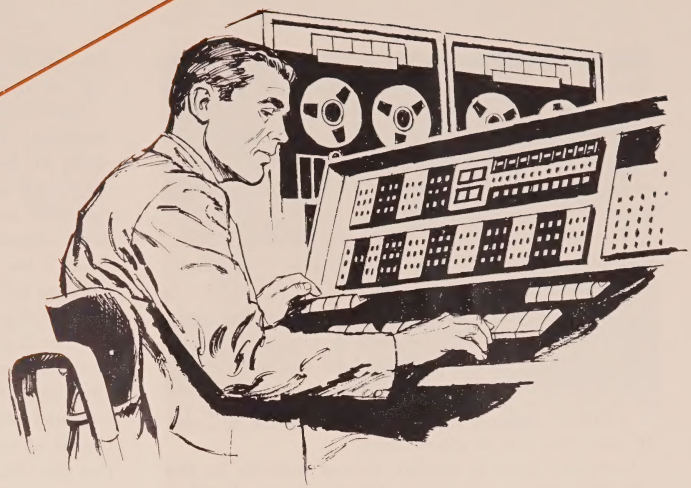
"The era of data networks is upon us," states one leading computer common carrier expert. The commercial, government and institutional market for multi-access data processing networks—once only a mathematician's dream—is now expected to be a $10 billion market by 1975.

What is a data transmission network? Though it can rightly be termed "many things to many people," the field of data transmission is primarily the combination of two fields, electronic data processing (EDP) and communications. The government seems to feel that the new technology is more communications than EDP, in that existing common carriers—such as telephone and Western Union facilities—are presently being used, and an entire new array of microwave systems is being planned to meet rapidly growing needs. As such, the FCC has given jurisdiction in the field, and has before it several decisions which will greatly affect the character and direction of this burgeoning industry.

Why do computers need to communicate? The data processing people tell us that there will be 40,000 IBM 360 systems (considered the "workhorse" computers) installed by the end of 1971. Many companies have in themselves small armies of computers, each with peculiar inputs and stored knowledge, which often need to be shared within a company for sales, engineering, product or equipment inventory, or for financial purposes. Thus, there becomes a need for a medium whereby machines at one location can "talk" to machines at other plants, stores or offices. Governments—local, state and Federal—also depend to a growing degree on interagency data transfer in routine affairs.

There is also a demand for facilities that permit people to talk to the EDP machines. The desire by hotels, banks, department stores, and travel companies for instant checks on credit confirmation, reservations, and pricing has led to the formation of new companies and

NETWORKS



new industries. Man/machine and facsimile-oriented systems for engineering, design, and research purposes are in need by a variety of customers, ranging from intra-city groups to international data search networks.

What companies are involved in EDP "broadcasting"? American Telephone & Telegraph and Western Union are already established in the data transmission business. AT&T handles about 80 percent of the present market through the use of existing cable and microwave circuits. Western Union has announced its entry into the market with a plan to serve 45 major cities with a low-speed transmission service, which the company states will cut costs to EDP users by as much as 80 percent.

Additional companies are hoping to enter the business to provide similar services, and at a lower price than AT&T. Two prospective competitors are the Data Transmission Company, a subsidiary of University Computing Company of Dallas, and Microwave Communicators of America, Inc. Both have on FCC file hundreds of microwave station construction applications, and have proposed large intercity networks. The contenders are also standing in line for satellite positions.

Although the FCC staff recommended in July, 1970 that the full Commission allow any company to enter the field that is "financially and technically qualified to do so," it has not yet ruled on the hundreds of applications on file. In the meantime, AT&T and WU are proceeding with plans to entrench their positions in the market.

The problem which must be answered by the FCC before microwave station construction can begin is whether companies such as Datran or MCI should be allowed to serve only a limited number of cities. Western Union, for one, feels that as "common carriers" they are obligated to serve all the people, in all cities, not just the more lucrative major urban markets. WU would force all data network competitors to make services available to all customers—large or small, in all cities—or not at all.

Western Union would promote its data transmission service by leasing private lines, operated mainly over the company's existing 7,900 miles of transcontinental microwave system. By utilizing channel subdivision techniques, lower rates to its customers will accrue. Speeds of WU's digital system will range from 75 to 150 bits of data per second. Computers can accept data at much faster speeds, however, and it is expected that new microwave systems will be capable of carrying up to 14,400 bits per second or more.

Although most data transmission presently being carried by AT&T is on existing Bell telephone lines, the company plans to have a private-line data network in operation by early 1974, completely separate from telephone lines and operate at high speeds. Soon after that, AT&T says, it will be able to offer a "switched system" over which data users could communicate through central exchanges without the necessity of private lines. By 1975, AT&T expects to have a digital network in operation serving approximately 60 major cities.

Datran, which anticipates a 10 percent slice of the total market by 1975, has filed FCC applications for construction permits to build 244 microwave radio stations. These stations would provide the basis for a coast-to-coast network that would initially serve 35 major metropolitan areas. Datran has also asked Comsat for possible use of communications satellite time for alternate transmission along its proposed route.

The MCI proposal involves 17 carriers serving 165 cities with business and data transmissions.

General Electric announced in September that it was forming an international information processing network, which is already "in partial operation in 42 cities in the U.S." The GE system, to be completed next year, will have three interconnected "supercenters" and will make use of several different types of computer services in 150 cities around the world "on a local telephone call basis." The GE network will employ Comsat's Intelsat

Continued on next page

III over the Atlantic, Pacific and Indian Oceans. The company has successfully field-tested its satellite channel to London.

What are the technical problems in data transmission? All major data networks confidently state that, from a technical standpoint, existing technology is more than competent to proceed.

There has been a minor controversy over the "ideal" mode of transmission to be employed in cross-country data transfer. Most television and voice transmission is in an analog mode. Computers talk in a digital mode, as do most man-machine oriented devices such as typewriters, high-speed printers, and facsimile devices. The proposed data systems are built around signals handled in a digital mode, although switched systems will play an important role in the medium.

Computer speed is another area of concern, in that different computers operate at different bit-speeds. Thus far, network offerings have been limited to slower rates, although the proposed networks offer most desired ranges: (1) up to 150 bits per second, (2) up to 4,800 bits per second, (3) up to 9,600 bits per second, and (4) up to 14.4 kilobits per second.

One further technical problem may still be partially unsolved. The lack of data processing standards—in areas of data descriptive languages, network control languages, and applications standards—may well slow the speed and ease of network implementation that has been suggested. One computer maker queried said that "only a few standards are being worked on at all, and progress is distressingly slow."

Other experts are not so pessimistic. Men who head up the Department of Defense's Advanced Research Projects Agency (ARPA) network foresee a more efficient use of the tremendous wealth of data stored in the computer memory banks around the world. A major benefit of systems like the one operated by ARPA is that they allow each user to tap needed resources, such as bigger or smaller computers, specialized data bases or software, located in other cities or on the other side of the world. We are indeed entering an era of data transmission networks.

TODAY'S COMPUTER: SOMETHING FOR EVERYONE

Computers already scan tax returns, check credit ratings, confirm trip reservations, and write bills for shopping, entertainment, travel, and hospitalization.

Next, they may tell the cook what to have for dinner.

The age of the computer is being followed by the age of the mini-computer, and some now on the market are programmed for the family kitchen.

They can plan complete meals around nearly two dozen entrees. If the housewife doesn't like the first selections, the computer will suggest compatible alternative soups, vegetables, and desserts.

In some affluent homes, computers perform a number of chores from helping the children with their homework to balancing the family checkbooks, the National Geographic Society says.

Home computers range from about $8,000 to $11,000, with a short course in their operation thrown in. For an extra $1,700, the buyer can install a teletype machine that will enable him to estimate his chances on the stock market or at the racetrack on any given day.

The proliferation of mini-computers and portable terminals for sending queries and receiving information is broadening the range of jobs computers can do.

From desk-top calculators weighing three pounds to room-sized data banks, computers are involved in business, industry, science, government, and education.

They navigate planes, ships, and spacecraft, keep tabs on wanted criminals, and regulate traffic lights.

With a 10-pound terminal resembling a portable typewriter, a businessman can call his home office from his hotel room, and "talk" with his company's computer.

If the terminal is battery-powered, he can call from a sidewalk phone booth—a sure way to attract attention.

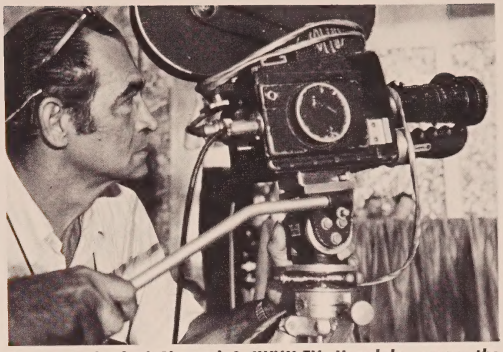
An elaborate computer used to train astronauts may be adapted for driver training. Projecting scenes that shift in response to the simulator's controls, it would permit a student to skid into an image of a wall, then replay the sequence in slow motion to see his error.

Computers have been put to some uses that were never in the manual. One man directed a computer not to enter any charges against him, then used his credit card liberally until the company brought in accountants to discover the fraud.

A bank similarly found that one of its computers had been programmed not to register overdrafts against the account of one of its free-spending customers.

And one man, whose scheme to collect refunds on several fake income tax returns was foiled by a computer, spent his prison term devising a foolproof mathematical method of beating the machine.

Released, he falsified dozens of returns, all good for large refunds, only to find that while he had been behind bars the Internal Revenue Service had installed a new generation of computers. **T-E**

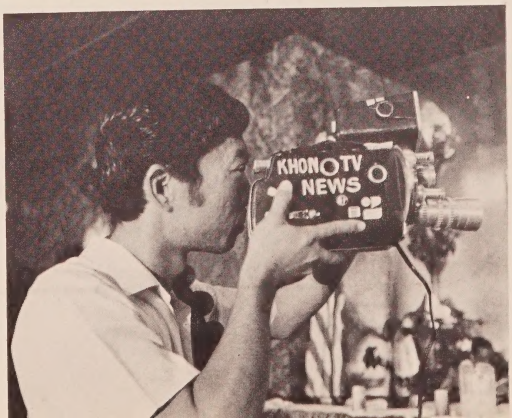


George Cabral of Channel 4, KHVH-TV, Honolulu, covers the action at the recent Letter Carriers meeting.

IBEW Local 1260 Puts Letter Carriers 'On Camera':

Honolulu Members Provide TV Coverage for Union Brothers

Above, a view of the recent convention of the National Assn. of Letter Carriers in Honolulu, covered for television by members of Local 1260.



Tom Hisamura, cameraman from KHON-TV (right), a member of IBEW Local 1260, films a speech. He carries a belt of batteries on his left shoulder as power supply.

IBEW FILES FCC

International Brotherhood concludes that

THE IBEW filed formal comments with the Federal Communications Commission in response to the Notice of Inquiry and Notice of Proposed Rule Making issued by the FCC in Docket No. 18930.

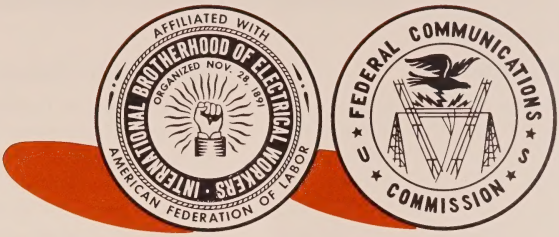
With marked sarcasm, the IBEW verified the statement made by the NAB in its petition for (further) relief that rule amendment was sought in 1952 in order "to reduce the number of first-class radiotelephone license holders" at certain limited power standard and FM broadcast stations. The IBEW reminds the Commission that the purpose of the 1952 petition was *magnificently accomplished* and that in 1962 the Brotherhood reported to the FCC that approximately 4,500 first-class operators had been displaced in the preceding ten-year period.

In 1962, of course, a further rule relaxation petition came before the Commission and, on the whole, the Petitioner was accorded favorable consideration.

In response to the specific questions posed in the Notice of Inquiry, the IBEW pointed out that previous rule relaxation has led to increased problems of operation, rule violations and serious deficiencies. Even with the institution of fines being levied, the Commission has found little or no improvement in compliance. And with the present low proportion of inspections, which the FCC explains as resulting from its limited budget and thus inadequate personnel, there is no prospective improvement in its efforts to police its rules and regulations or technical standards. Hence, the IBEW has reminded the Commission that it must substantially rely upon the proficiency and character of operating personnel for maintenance of its standards.

The so-called shortage of first-class operators is referred to as illusionary, since such a great proportion of the stations which plead this handicap are simply not willing to offer rates of pay commensurate with those employed in other occupations who have lesser skills, let alone rates of pay attractive to qualified operators who are available.

In reply to the questions of having more rules and having a chief engineer or supervising operator responsible for operation by third-class operators, the answers dismiss the subjects by citation of logic and practicality. The impracticality of having a supervising operator on duty or at least on the premises at all times would negate the necessity of having third-class operators in the latter case and, in the former, the institution of more rules would accomplish no more than the existing rules. The Commis-



COMMENTS

operator rules should be strengthened, not relaxed

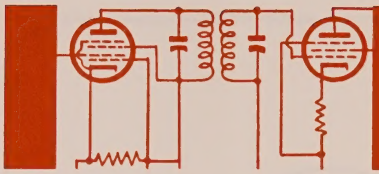
sion's records now show that stations are operated at unauthorized hours, with unauthorized power, without licensed personnel and with falsified logs—or no logs.

We—and, we suspect even the FCC—would predict that more rules would produce more violations (and fines, if and when the Commission inspects or monitors the stations). Such defections as overmodulation and incorrect power may be blamed upon the operators, but operation at unauthorized hours, improper licenses (both stations' and operators') and even the failure to renew the stations' licenses can be no other than managements' responsibility, as the voluminous files of the FCC already reflect.

The IBEW statement included an answer to each of the questions formulated by the Commission, except those relating to equipment availability and delivery. Several of the questions were answered on the basis of information derived by personal interviews with technicians, in stations across the country. Much useful information was received by mail; notable for response to the written inquiry by the International Office are those responses from Local Unions 715, 1139, 1264 and 1241.

The IBEW filing stated that "We have undertaken a rather extensive survey of a number of AM and FM stations, to determine a logical and reasonable position as to the proposals of the Petition, utilizing the experience and the opinions of operators employed at various stations in widely-separated locations across the United States. *So as to protect the anonymity of both stations and technicians, no specific identification will be provided herein.*"

Two conclusions are drawn in the fourteen pages of IBEW Comment. "Today's qualified and experienced technicians have serious problems in transmitter operation, many of which are avoided or solved as a result of their serious dedication to the acquisition of technical information, their pride in achievement and workmanship, and often something like a sixth sense. It seems clear that improvement in technical operations, more stringent requiremennts, more frequent inspections, mandatory compliance with the Rules and Regulations, and recognition of the need for license-qualified technicians should be before the Commission—not a relaxation of requirements and rules, presently proposed." The final conclusion of the filing was short—and to the point. "The IBEW respectfully submits that the Petition be dismissed." Q.E.D.



TECHNICAL Notes

LOW LIGHT LEVEL CAMERA

Among equipment exhibits at the recent convention of the National Association of Educational Broadcasters was a new single-vidicon color television studio camera that weighs just 30 pounds. The camera operates in an illumination range of 75 to 250 foot candles. Color reproduction is described by Motorola, its manufacturer, as "excellent" at 75 foot candles—a level about one-fourth that usually required in a studio.

MOBILE STAGES MOVE ON AIR

Two 25-ton mobile stages used on the set of the Andy Williams Show "float through the air with the greatest of ease"—literally. With the help of 18 air bearings made by Rolair Systems, Inc., stage/bleachers can be moved about by only three stage-hands. Each 25-ton section has bearings with diaphragms that are inflated by air tanks, similar to those used by underwater divers. Through controlled leverage a layer of air is forced out between the bearings and the floor, permitting the stages to actually "float."

IT'S COMING: RADAR FOR CARS

A Doppler radar module and automatic braking package will go into pilot production around the first of the year, which according to the manufacturer will make it "practically impossible for a driver to run into another car." The Hewlett-Packard Company has combined thin-film microcircuitry and microwave technology to provide a tiny radar unit the size of a man's fist that will pick up an object as far away as 2000 feet. With the complete system an obstruction is detected and the automobile is brought to a safe, no-foot stop.

The radar unit will cost "well under $100" when mass-produced, and the complete system supplementing the regular brake system, should cost no more than $300 or $400.

Once a science-fiction dream, similar equipment has been used experimentally in trucks for some time, but at a cost of $1000 per unit. According to Hewlett-Packard, major auto makers are also working on systems of this type and will probably introduce their models in two or three years.

In addition to automotive uses, the unit is believed to have wide application in other fields, including intrusion alarms, traffic control, and cable television transmission systems.

MINIATURE TRANSMITTER

Lolnic, Inc., of Poughkeepsie, N. Y., is marketing a wireless FM transmitter that is little larger than a cigarette package. It is designed to be used in the home for monitoring the baby's room, wireless tape recording, etc. The receiver for the miniature station can be an FM set tuned to a blank spot between 90-106 mHz. The mike is then adjusted to the same frequency, and the unit is ready to broadcast. Price is less than $30.00.

RADIO-GUIDED PARACHUTES

The Atomic Energy Commission reports that its Rocket and Recovery Systems Division is perfecting a remote-radio controlled parachute. With it, an operator on the ground or in an aircraft follows the course of the chute from a small television screen and manipulates control flaps in the chute in much the same manner that radio-controlled model airplanes are flown. A gyro-stabilized video camera is installed on the parachute's payload.

With the AEC device, emergency airplane evacuees could be directed to safe recovery areas. In tests using the radio-controlled chutes, intended target center "miss" averaged only seven feet per 1,000 feet of descent; uncontrolled parachutes typically miss an intended target by about 150 feet per 1,000 feet of decent.

LONG-LIFE BATTERY

In Tokyo, Yuasa Battery Company and Toshiba are all charged up about the development of a new sodium-sulfur hot battery. Operating at 570 deg F, it has an output of 150 watt-hours per kilogram at a three-hour discharge rate. The power supply employs sodium as the negative electrode and electro-conductive sulfur for the positive anode; separation is by means of beta-alumina ceramic, a solid electrolyte through which sodium ions will flow. Advantages, the Japanese claim, include capability for fast or slow discharge, a better than 100-cycle life expectancy, no generation of gases and the relative abundance of sodium and sulfur necessary for manufacture. The battery is seen as an important aid to the development of an electric automobile. The new power source is said to be adequate to drive a car 150 miles on a single charge at a speed of 60 miles per hour. Plans are going ahead for production of larger mass-produced batteries that will have an output of 300 watt-hours per kilogram.

NEW TWIST ON VIDEO RECORDERS

A system called Teldec, developed by Telefunken of West Germany and British Decca, has been introduced that will reproduce motion pictures on home television via plastic disks. The method is the latest entry in the race to capture a fast-ballooning market in video recording. The system impresses moving pictures on discs of foil one millimeter thick, in grooves roughly ten times as small as those on long-playing sound records.

Each disk measures nine inches in diameter and provides five minutes of picture running time. An automatic record changer will extend running time to an hour or more. Teldec utilizes the same basic theory used in instant replay television broadcasting devices.

The Teldec disk is not placed on a turntable, but rotates at 1500 rpm above a fixed plate on a cushion of air. As with other video recording devices, the Teldec requires only the connection of two wires to the antenna posts of a home TV receiver.

A piezoelectric pickup with a diamond stylus, operating with a miniscule tracing pressure, uses "hill and dale" methods to sense visual and sound information from the disk's grooves.

Principal advantage of the disk system would be in the economy of making mass copies, as opposed to more expensive duplication of film or tape. So far, the unit produces only black and white pictures.

LOW-COST LASERS FOR TV

Zenith Radio Corp. has developed an advanced acousto-optic intensity modulator system which makes possible the economical application of laser beams in such fields as data processing, communications, and video film recording.

The modulator, which is about one-quarter the size of conventional units, utilizes interaction of laser light and ultrasound and operates over the entire visible and near-infrared spectrum.

The unit was developed by the company's Acousto-optic Development Group as a key component in Zenith's tri-color laser television projection system.

The new unit, according to Zenith engineers, is highly efficient, requires low power, and is more economical to build and operate than conventional devices which are of the electro-optic type.

The key to the compact unit's low cost and simplicity of operation is the use of inexpensive glass rather than exotic crystals required for conventionally-designed modulators.

The modulator cell consists of a glass block and a source of ultrasound (40 MHz). In operation, the sound waves pass through the laser light beam, diffracting a portion of the light and causing it to change direction. Light is produced in one principal order.

CATV FUTURE TIED TO TWO-WAY ELECTRONIC SERVICES FOR THE HOME

The Federal Communications Commission is being urged to adopt community antenna TV engineering standards equal to broadcast requirements to protect the public's investment in TV sets and to provide an orderly transition to new electronic services for the home.

In comments on CATV technical standards filed with the FCC, Zenith Radio strongly recommended that standards for CATV signal quality be equivalent to those for broadcast signals. "The fundamental reason for this concern is that the design of nearly 90 million TV sets in the hands of the U.S. public . . . has been controlled by broadcast standards."

In contrast to the public's multi-million dollar investment in broadcast TV receivers, the "investment by CATV system owner is comparatively small, even on a per-home basis. Existing CATV systems now serve no more than 7 percent of the U.S. TV homes and are primarily located in relatively small population areas or regions where the quantity and/or quality of broadcast signals are inadequate."

"No one knows," the study continued, "how many of the other 93 percent of U.S. TV homes will be willing to pay the costs of whatever benefits new or extended cable systems have the potential of eventually providing."

Zenith further urged that future cable systems be designed for the later addition of two-way capability at minimum cost, following general guidelines for return communications as suggested by the FCC.

It recommended that FCC rules "expressly require" CATV-originated signals to meet the same technical standards for quality as those required of TV broadcast stations. "In the absence of these requirements, the Commission's stated purpose of ensuring the quality of pictures delivered to the subscriber's terminal may be nullified by inferior local origination signals."

The electronics firm also recommended that minimum channel capacity for CATV systems be specified by the FCC as the 12 VHF channels, since all receivers can tune at least VHF channels 2-13 and that cables now used will carry at least these same 12 VHF channels. This eliminates an expensive converter for the subscriber.

To further safeguard the vast public investment in receivers, the company recommended that when more than 12 channels are needed in a system, additional cables be brought into the home to accommodate them, with each cable carrying channels 2-13. A simple and inexpensive multi-position switch would permit switching between cables, or between each block of 12 channels, while the TV receiver would continue to tune channels 2-13 in the normal way.

STATION BREAKS

WORK BEGINS ON N.Y.C. ANTENNA

The Port Authority of New York has awarded a $4,071,000 contract for the design and manufacturing of TV and FM antenna facilities to be placed atop the north tower of the new World Trade Center, now the tallest building in the world.

The contract was delivered to RCA Corp. for the building of a 365-foot supporting mast, antennas and transmission lines that will be erected on the 1,350-foot building. Ten New York area TV stations and seven FM radio stations will transmit from the structure located in lower Manhattan.

The Port Authority action results from an agreement reached with the TV broadcasters all-industry committee in 1967 to overcome possible interference with broadcast in certain parts of the area because of construction of the mammoth Trade Center. At the present time, nine of the 10 New York television stations transmit from a 222-foot tower on the 1250-foot high Empire State Building.

NEWSPAPER ON CATV

Despite cool, calculated efforts of government to separate the printed and electronic communications media, the Lewiston (Idaho) *Tribune* is seeking to present much of its news over local CATV. The morning newspaper would supply news copy to be aired in the evening over an existing 7000-subscriber cable TV system. The newspaper would, according to its own report, provide "fairly brief reporting of stories from the editorial staff, adding a round-the-clock aspect to the *Tribune's* service to the community."

Wasn't this the idea behind the first news reporting on radio nearly 50 years ago?

TV RATED 'MOST RELIABLE'

According to a recent *Newsweek* opinion poll, the American public rates television superior to other news media in "keeping people informed about important problems." TV was rated best by 65 percent of those polled, followed by newspapers, radio, and newsmagazines in that order. A similar pattern was shown toward performance in doing the news reporting job, but with newsmagazines and newspapers swapping second and fourth places. The poll also revealed that 89 percent of the people felt that radio and television newsmen should be accorded the same constitutional rights guaranteed to print journalists under the Bill of Rights.

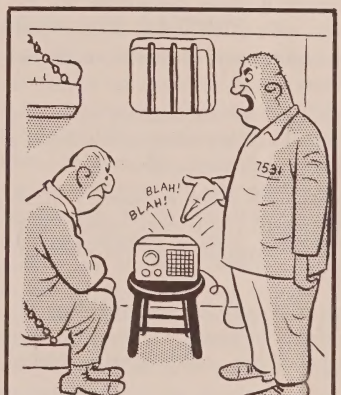
A CHILDREN'S TV NETWORK?

Michael H. Dann, a former CBS-TV vice president now in a similar position at Children's Television Network, reports that CTW is experimenting with new program forms, including, possibly, "the eventual creation of a children's network via cable TV." In addition, the "Sesame Street" producer was exploring the feasibility of launching a series aimed at 7 to 10-year-olds with histories of reading failures. CTW is also considering the acquisition of cable television franchises in Washington, D.C. and other areas.

COLORING THE TV MARKET

There are four million more color television sets in the U. S. this year than last, reports NBC. That network's third-quarter report estimated a total of 26.2 million color sets, an increase of 18 percent over the same period in 1969. According to a company spokesman, the market is also showing an improvement, based on increased set sales in September. The Electronics Industries Association, however, notes that overall sales of color TVs for the first nine months of 1970 was down over 20 percent from last year.

LAST LAUGH



"They call us guys 'cons', yet just listen to them politicians 'con' the public!"